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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application
No. 09/382, 438

For: Method and Apparatus Using a
Multi-Carrier Forward Link in
a Communication System

GARDNER et al.

Examiner: D.J. RYMAN

Filed: 8/25/1999

Group No.

2665

APPELLANT'S BRIEF

37 CFR § 1.192

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JUN 17 2004

Technology Center 2600

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

Appellants hereby submit the below response.

CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8(a))

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REAL PARTY IN INTEREST

The real party in interest is Qualcomm, Incorporated, assignee of the present application.

RELATED APPEALS AND INTERFERENCES

There are no related appeals and interferences.

STATUS OF CLAIMS

Claims 10-28 are pending in this Application. Claims 10-22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Tiedemann Jr. (US Patent Number 5,604,730) in view of Illidge (US Patent Number 6,101,394). Claims 23-28 under 35 U.S.C. §103(a) as being unpatentable over Tiedemann (US Patent Number 5,604,730) in view of Illidge (US Patent Number 6, 101, 394) and further in view of additional previously noted prior art.

Appellants appeal the rejections of claims 10-28.

STATUS OF AMENDMENTS

No amendments have been presented since issuance of the Final Office Action.

SUMMARY OF THE INVENTION

As stated in the Background section of the originally filed Application for Patent, at the time of the present invention, the bandwidth allocated to reverse link transmissions is the same as the bandwidth allocated for forward link transmissions. With reference to the Summary of the Invention, page 7, lines 5-17, the present invention provides a method for spectrum management which allows the bandwidth used in the forward link to vary from the bandwidth in the reverse link.

In one embodiment, a single carrier reverse link is used in conjunction with a multiple-carrier forward link. For example, in a 3X system, the forward link may be three times the bandwidth of the reverse link.

In one embodiment, the present invention provides a method wherein a single cdma2000 1X reverse link (1X RL) is used in conjunction with a cdma2000 3X (3X FL). For example, the 3X FL has three carriers and the 1X RL has one carrier. The 3X FL carriers may occupy adjacent "frequency bins," wherein according to one embodiment, the 1X RL carrier may be the center frequency bin. Alternate embodiments may locate the 1X RL at any of the frequency bins. Note that a 3X FL carrier may use one or more carriers with a chip rate greater than the chip rate of a 1X RL carrier.

Appellants refer to FIG. 2 illustrating the allocation of three carriers on the forward link. The associated reverse link may have only one carrier assigned. As illustrated, the bandwidth of the forward link is allocated differently from the bandwidth of the reverse link. In this way, spectrum management optimizes the use of multi-carriers available in a system such as a 3X system.

ISSUE

- I. Whether claims 10-22 are patentable over Tiedemann in view of Illidge.
- II. Whether claims 23-28 are patentable over Tiedemann in view of Illidge further in view of additional previously noted prior art.

GROUPING OF CLAIMS

All claims stand or fall together.

ARGUMENT

Issue I: Claims 10-22

The Examiner has rejected the above appealed claims as unpatentable over Tiedemann in view of Illidge. To establish a *prima facie* case of obviousness three basic criteria must be met. The prior art reference(s) must teach or suggest all the claim limitations. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. In addition, there must be a reasonable expectation of success.

Appellants respectfully submit that the Examiner has failed to make a *prima facie* case of obviousness as required above. The references cited by the Examiner do not teach or suggest all of the claims limitations, nor do these references provide a suggestion or motivation to modify or combine the reference teachings. Therefore, there is no reasonable expectation of success for such proposed modification or combination.

Appellants respectfully submit that the cited references do not teach or suggest each and every limitation of the claims. With respect to claim 10, the pending claim recites:

Claim 10. A method in a wireless communication system, comprising:
 designating a multi-carrier forward link having a plurality of
 forward link frequency bins; and
 designating a reverse link having at least one reverse link frequency
 bin,
 wherein the forward link frequency bins and the at least one reverse link
 frequency bin are designated such that bandwidth of the forward link can
 be allocated differently from bandwidth of the reverse link.

The Examiner claims that the “plurality of packet channels” referred to by Tiedemann in Fig. 7 and col. 5, lines 16-26 reads on the “plurality of forward link frequency bins” as taught in Appellants’ claims 10, 17 and 20. The “plurality of packet channels” cited by Tiedemann

include: the pilot, sync, paging, traffic, packet channels and power control sub-channels. Fig. 7 of Tiedemann depicts these channels on a 1.23MHz Forward CDMA channel. These channels are part of a standard forward CDMA channel and do not read on a “plurality of forward link frequency bins” as suggested by the Examiner. In the Appellants’ current Application for Patent, “frequency bin” describes a 1.25MHz band within a band class. See Application for Patent page 12, lines 6-7. Tiedemann does not teach or even suggest having a plurality of 1.25MHz bands within a band class. Appellants maintain the section of the reference identified by the Examiner shows a forward link having one forward link frequency bin.

The section of Tiedemann identified by the Examiner does not teach or even suggest “forward link frequency bins and the at least one reverse link frequency bin ... designated such that bandwidth of the forward link can be allocated differently from bandwidth of the reverse link.” Appellants’ Application for Patent, page 7, teaches a CDMA2000 1X reverse link used in conjunction with a CDMA200 3X forward link wherein the 1X carrier bin may be located in the center frequency bin range or at any one of the three frequencies. The 1X carrier bin may be located anywhere within the provider’s allotted frequency band. First, Appellants maintain that forward and reverse link bins as taught in the Application for Patent are not taught or even suggested by this section of Tiedemann. Second, Tiedemann shows a 1.23MHz Forward CDMA channel and the corresponding 1.23MHz reverse CDMA channel in Figs. 7 and 8. The Examiner has failed to identify, in the prior art of reference, a teaching of allocating a reverse link frequency bin differently from the forward link frequency bins. The Examiner has failed to identify in the prior art of record Appellants’ claim limitation “the forward link frequency bins and the at least one reverse link frequency bin are designated such that the bandwidth of the forward link is allocated differently from the bandwidth of the reverse link.” The Examiner has failed to provide a prior art reference teaching frequency bins as defined by the Appellants’ Application for Patent.

Again, in the Office Action dated June 27th, 2003, the Examiner states “Tiedemann in view of Proctor possibly does not expressly disclose that the forward link frequency bins and reverse link frequency bin are designated such that bandwidth of the forward link is allocated differently from bandwidth of the reverse link.” The Examiner claims to have found, upon further review,

passages of Tiedemann that disclose “the forward link frequency bins and reverse link frequency bin designated such that the bandwidth of the forward link is allocated differently from bandwidth of the reverse link.” The Examiner however, does not disclose the specific passages relied upon in this argument. The Appellants maintain that this claim limitation is not taught or even suggested by Tiedemann.

Appellants respectfully disagree with the Examiner’s characterization of Illidge. Illidge does not teach or even suggest “designating a multi-carrier forward link having a plurality of forward link frequency bins” or “the forward link frequency bins and the at least one reverse link frequency bin are designated such that bandwidth of the forward link can be allocated differently from bandwidth of the reverse link.” Appellants maintain that Illidge shows multiple carriers but does not teach or even suggest a “multi-carrier forward link.” The Examiner cites Illidge as teaching a known multi-carrier system in order to increase capacity of a system. This reference further shows that in order to page a Mobile Station (MS), a page must be sent on all of the carrier frequencies to ensure the MS gets the page on the channel the MS is listening to. Illidge col.1, lines 9-30. Also, Illidge states “[T]he MS is assigned by the BTS to a particular band class and channel number. The band class identifies on which of the several band classes the MS 22 is operating . . . The channel number identifies the particular carrier within which the identified band class that the MS has been assigned.” Id., Col.3, lines 18-23. Furthermore, Illidge teaches broadcasting the message to a particular MS based on the identifying the particular channel the MS is on. Id at line 48. In contrast to Illidge, the Appellants’ Application for Patent refers to forward link distribution of data by type over the forward link carriers.

In one embodiment of the proposed invention using a cdma2000 MC FL transmission system, each of the channels of information is evenly distributed across each of the three carriers of the forward link ... in another embodiment of the present invention, different types of information is transmitted using different carriers...

See Appellants’ originally filed specification, pages 14-15. The “different carriers” in the Appellants’ Application for Patent refers to “a multi-carrier forward link having a plurality of forward link frequency bins.”

Still further, page 19, lines 11-20 of the Appellants' specification reference is made to distinct signals generated from a parent signal being transmitted using one or more channels. This is not taught or even suggested by Illidge. The claim limitation "designating a multi-carrier forward link having a plurality of forward link frequency bins" is not taught or even suggested by Illidge.

As shown, none of the cited references alone or in combination teaches each and every element of the pending claims relating to a CDMA system including "a multi-carrier forward link having a plurality of forward link frequency bins." Nor do the references teach "the forward link frequency bins and the at least one reverse link frequency bin are designated such that bandwidth of the forward link can be allocated differently from bandwidth of the reverse link." Further, the prior art cited does not provide a suggestion or motivation to modify the reference or to combine reference teachings as the Examiner has suggested. Still further, consistent with the discussion given hereinabove, a combination of the teachings of the individual prior art references would not result in Appellants' claimed invention. Thus a *prima facie* case of obviousness has not been established regarding claim 10.

Issue II: Claims 23-28

The Examiner has rejected the above appealed claims as being unpatentable over Tiedemann in view of Illidge further in view of additional previously noted prior art.

The arguments provided hereinabove are also applicable to these claims which depend on claim 10.

Conclusion

Appellants respectfully submit that the Examiner has inappropriately rejected the pending claims on prior art references that do not support a 35 U.S.C. §103(a) rejection. Appellants further respectfully submit that the present Application and the claims appealed are patentable over the prior art of record.

Respectfully submitted,

Dated: 6/10/04

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APPENDIX A

CLAIMS AS PENDING

Claims 1-9 (Previously Canceled)

Claim 10. (Previously Presented) A method in a wireless communication system, comprising:
designating a multi-carrier forward link having a plurality of forward link frequency bins;
and
designating a reverse link having at least one reverse link frequency bin,
wherein the forward link frequency bins and the at least one reverse link frequency bin are
designated such that bandwidth of the forward link can be allocated differently from
bandwidth of the reverse link.

Claim 11. (Previously Presented) The method of claim 10 further comprising:
selecting a first forward link frequency bin from the plurality of forward link frequency
bins for forward link transmission, the first forward link frequency bin having an
associated first reverse link frequency bin; and
selecting a second reverse link frequency bin for reverse link transmission corresponding
to the forward link transmission wherein the second reverse link frequency bin is
different from the first reverse link frequency bin.

Claim 12. (Previously Presented) The method of claim 11 wherein the selecting a second
reverse link frequency bin is based on loading of the system.

Claim 13. (Previously Presented) The method of claim 11, further comprising:
selecting a third reverse link frequency bin for reverse link transmission corresponding to
the forward link transmission, wherein the third reverse link frequency bin is
different from the first and second reverse link frequency bins.

Claim 14. (Previously Presented) The method in accordance with claim 10, wherein said plurality of forward link frequency bins comprise three frequency bins.

Claim 15. (Previously Presented) The method in accordance with claim 10, wherein said plurality of forward link frequency bins are adjacent frequency bins.

Claim 16. (Previously Presented) The method in accordance with claim 11, wherein said multi-carrier forward link is adapted for transmission of a plurality of code channels, wherein one of said plurality of code channels is used to communicate power control information for said second reverse link frequency bin.

Claim 17. (Previously Presented) A method of allocating bandwidth for forward and reverse link transmissions in a wireless communication system, comprising:

receiving communications on a multi-carrier forward link, the multi-carrier forward link having a plurality of forward link frequency bins, the reverse link having at least one frequency bin,

wherein the forward link bins and the at least one reverse link frequency bins are configured such that the allocation of bandwidth for the forward and reverse link transmissions can be varied.

Claim 18. (Previously Presented) The method of claim 17, further comprising:

receiving by a first device a communication on a forward link frequency bin, the forward link frequency bin having an associated first reverse link frequency bin; and
transmitting by a second device via a second reverse link frequency bin, wherein said second reverse link frequency bin is different from the first reverse link frequency bin.

Claim 19. (Previously Presented) The method as in claim 18, further comprising:

receiving by the first device an indication of a reverse link frequency bin.

Claim 20. (Previously Presented) An apparatus in a wireless communication system, comprising:

- a first means for transmitting information on a multi-carrier forward link, wherein said multi-carrier forward link comprises a plurality of forward link frequency bins; and
- a second means for designating a reverse link frequency bin, wherein said first and second means configure the frequency bins so as to enable differential allocation of bandwidth for forward link and reverse link transmissions.

Claim 21. (Previously Presented) The apparatus of claim 20, further comprising:

- means for selecting a first forward link frequency bin from the plurality of forward link frequency bins for the forward link transmission, the first forward link frequency bin having an associated first reverse link frequency bins; and
- means for selecting a second reverse link frequency bin for the reverse link transmission corresponding to the forward link transmission, wherein the second reverse link frequency bin is different from the first reverse link frequency bin.

Claim 22. (Previously Presented) The method of claim 10, wherein the designations of the forward and reverse link includes allocating more bandwidth for the forward link than the reverse link.

Claim 23. (Previously Presented) The method of claim 10, wherein the designation of the forward link includes configuring the forward link as a cdma2000 3X forward link.

Claim 24. (Previously Presented) The method of claim 23, wherein the forward link includes first, second, and third carriers.

Claim 25. (Previously Presented) The method of claim 24, wherein said first, second, and third carriers occupy first, second, and third adjacent frequency bins, respectively.

Claim 26. (Previously Presented) The method of claim 25, wherein the designation of the reverse link includes configuring the reverse link as a cdma2000 1X reverse link.

Claim 27. (Previously Presented) The method of claim 26, wherein the reverse link includes a fourth carrier.

Claim 28. (Previously Presented) The method of claim 27, wherein the fourth carrier is located in a frequency range similar to the second frequency bin.



Attorney Docket No.:
Customer No.: 23696
Date: 6/10/2004

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In Re Application of: GARDNER et al.

Application 09/382,438

Filed: 8/25/1999

No.:

For: METHOD AND APPARATUS USING A MULTI-CARRIER FORWARD LINK IN A COMMUNICATION SYSTEM

Mail Stop Appeal Brief
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P.O. Box 1450
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JUN 17 2004

Dear Sir:

Transmitted herewith for filing is an Appeal Brief in triplicate in the above identified application Technology Center 2000

☐ Applicant is a small entity - a verified statement

☐ is enclosed.

☐ has already been filed.

In addition to the Appeal Brief, the following documents are enclosed:

☒ Appendix A (claims as appealed)

☐ Appendix B

☐ Appendix C

☐ Fee check in the amount of \$_____ is enclosed to pay for any claim and/or extension fees.

☒ Please charge Deposit Account No. 17 - 0026 of QUALCOMM, Incorporated. in the amount of \$ 330.00.

The Commissioner is hereby authorized to charge payment of any additional fees which may be required, or credit any overpayment, to said Deposit Account No. 17 - 0026. A duplicate of this sheet is enclosed.

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